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March 13, 2018 *electronic delivery*

Mr. Robert J. Wyatt
NW Natural
220 NW Second Avenue
Portland, OR 97209

RE: Draft Stormwater Source Control Measures and Performance Monitoring Work Plan, NW Natural "Gasco" Site, Portland, Oregon - ECSI# 84

Dear Bob:

The Department of Environmental Quality (DEQ) reviewed the Draft Stormwater Source Control Measures and Performance Monitoring Work Plan (Draft SCM Plan) for the NW Natural Gasco Site, dated January 5, 2018 and prepared by Anchor QEA, LLC, on behalf of NW Natural. DEQ also provided the Draft SCM Plan to EPA and the City of Portland for their review.

DEQ found the SCM Plan to be responsive to DEQ's request to retitle, restructure and revise NW Natural's Draft Source Control Evaluation Report, dated June 20, 2017, in consideration of comments presented in DEQ's letter dated August 4, 2017. DEQ appreciates NW Natural's diligence in ensuring previous comments were adequately addressed and actions proposed are appropriate to improve site conditions in conjunction with NPDES 1200Z permit requirements, which will be measured by the proposed effectiveness demonstration plan. Please revise the SCM Plan in consideration of DEQ comments below and the attached comments from EPA and the City of Portland.

Comments

1. Section 2.2.3 Other Map Updates - Groundwater Hydraulic Control and Containment System: DEQ clarifies that the removal action objectives of the hydraulic control and contaminant system are to prevent contaminated uplands groundwater in the Alluvium water-bearing zone from migrating to the Willamette River, while minimizing DNAPL mobilization resulting from operating the system. Please reword the text accordingly.

2. Figure 2.6 Site Subsurface Utilities and Seasonal High Groundwater Elevations – Koppers Lease Area: While the text in Section 2.4.2 includes the estimated elevation of the CMP outfall in the upper swale as the lowest potential stormwater infrastructure in the area leading to Doane Creek, this elevation is not provided on Figure 2.6. Please include this estimated elevation to improve interpretation of the potential for preferential transport of contaminated groundwater to Doane Creek.

3. Section 3.5 Source Control Data Needs – Upland Stormwater Monitoring: DEQ concurs with NW Natural that available stormwater and stormwater solids data may not be representative of current conditions, and initial conclusions regarding site COCs and sources of contamination should be

further evaluated through additional sampling and analysis. DEQ requests that future stormwater and stormwater solids sampling and analysis consider site COCs identified in other investigations, such as the Gasco Site Human Health and Ecological Risk Assessment (December 2014, revised by DEQ May 22, 2015 comments). Please add an acknowledgement of this to the text in this section.

4. 3.5 Source Control Data Needs – Groundwater Modeling Analysis of Koppers Area Infiltration (Subbasin A): DEQ notes that the stormwater discharge pipe from the Koppers tank basin to the City of Portland sanitary sewer is currently connected and in use. The pipe is anticipated to be disconnected during the final stages of Koppers demolition project. Please reword the text accordingly.

5. Section 4.1.2 Design Considerations: Text in this section refers the reader to Section 4.7 for information on timing of source control measures design and implementation. Timeline information appears in Sections 4.6 and 4.8. Please correct.

6. Section 4.2 Infiltration Facilities: Due to the presence of manufactured gas plant residuals in soil and groundwater along the riverbank, focused infiltration of stormwater at areas near the Hydraulic Control and Containment Operation and Maintenance Compound, the Pacific Terminals Office and the most riverward portions of the site boundary with the Siltronic site, as indicated on Figure 4-1, may not be appropriate. Please propose additional stormwater management options for these areas, which may include lined infiltration facilities with conveyance, above ground planter box, green roof or other measures. Please update Section 4.2 subsections and Table 4-1, as appropriate.

7. Section 5.1.2 Stormwater Sampling: DEQ supports the efficiency of using the same stormwater monitoring events to meet the requirements of both the 1200Z permit and source control performance monitoring. However, sampling requirements between the two vary.
    a. Please ensure that the storm event protocols in DEQ's Guidance for Evaluating the Stormwater Pathway at Upland Sites are met, that all contaminants relevant to stormwater source control for Portland Harbor are analyzed, that laboratory method detection limits are sufficiently low for comparison to source control screening levels (Cleanup Levels for surface water on Table 17 from EPA's 2017 Portland Harbor ROD and stormwater Screening Level Values on Table 3-1 of the EPA/DEQ 2005 Joint Source Control Strategy), and that all data is reported to both DEQ Cleanup and City of Portland (as DEQ's agent for the 1200Z permit).
    b. To achieve adequate sampling for source control effectiveness within the rainy season, additional sampling events may be necessary that do not adhere to the 1200Z permit requirement of 14 days between samples.

8. Section 5.3 Adaptive Management: Based on site stormwater and stormwater solids data collected to date, DEQ's letters on site stormwater source control (dated July 15, 2016 and August 4, 2017) requested development of stormwater source control measures for basins C and D. DEQ appreciates that the proposed regrading, resurfacing, infiltration enhancements and pipe repair, cleaning and retrofit described in Section 4 are likely to reduce stormwater volumes and improve stormwater quality from within these basins. DEQ acknowledges statements in Sections 3.4.1.1 and 3.4.1.2, which indicate that additional stormwater monitoring data, following implementation of source control measures, will be needed to understand whether additional source tracing or measures are

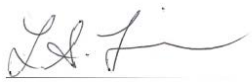
needed in basins C and D. While DEQ supports the Section 5.1.2 approach to use data collected for both 1200Z permit and source control purposes, DEQ cautions that effective source tracing may not be achievable using data collected at the outfall where discharges from both basin C and D comingle. Additional stormwater sampling from points where basin discharges can be distinguished, stormwater solids sampling or other media sampling may be needed. Please acknowledge the potential for additional source tracing in this section and sketch out a conceptual approach.

9. Table 5-1 Stormwater SCM Monitoring and Effectiveness Demonstration Measures: Regrading and resurfacing is proposed for application in areas other than the shoreline.
    a. Please expand the objective and effectiveness indicators of this SCM to be inclusive of all areas where it will be applied.
    b. Please revise the effectiveness indicator for shoreline areas to be "no observed overland flow discharges over an entire water year with comparable or greater precipitation and saturation conditions as the 2016-17 water year when initial observations were made."

10. Section 5.4 Effectiveness Demonstration Indicators: Please include a description of interim and final reports on these indicators to be submitted to DEQ for review and approval prior to implementation of adaptive management measures or additional source tracing or other actions necessitated by effectiveness demonstration information. At a minimum, the report(s) should include the results of dry weather observations at infrastructure with potential to preferentially transport contaminated groundwater to the Willamette River or Doane Creek; wet weather observations at abandoned infrastructure components; overland flow observations; stormwater monitoring results; source tracing proposals, as warranted; and adaptive management options.

Please revise the SCM Plan to incorporate all above DEQ comments and EPA Primary Comments, as well as City of Portland comments. DEQ acknowledges that some of the City of Portland comments with regard to permitting processes may necessitate further coordination and changes to the SCM Plan, which may require additional time than the standard 30 days called for in the Order. Please submit the revised plan for DEQ review and approval within 60 days of this letter, or by May 14, 2018. Please feel free to contact me to discuss a revised schedule for submittal or with questions about this letter or the source control process at liverman.alex@deq.state.or.us or 503-229-5080 or at the address on this letterhead.

Sincerely,



L. Alexandra Liverman
Portland Harbor Stormwater Coordinator

Attachments: EPA comments; City of Portland comments

cc: Patty Dost, Pearl Legal Group
Todd Thornburg, Anchor
Kim Slack, Anchor
Rob Ede, Hahn and Associates, Inc.
Myron Burr, Siltronic
Cindy Ryals, City of Portland
Laura Johnson, City of Portland
Sean Sheldrake, EPA
Dana Bayuk, DEQ
ECSI #84 File

Review Comments
Stormwater Source Control Measures and Performance Monitoring Work Plan
NW Natural Gasco Property
ECSI No. 84
Dated January 5, 2018

Reviewed March 8, 2018

The following are the United States Environmental Protection Agency's (EPA) comments pertaining to the January 5, 2018 document titled *Stormwater Source Control Measures and Performance Monitoring Work Plan* (Work Plan) prepared by Anchor QEA for NW Natural. The NW Natural Gasco Property (the site) is located at 7900 NW St. Helens Road in Portland, Oregon. The site is located on the west bank of the Willamette River in the Portland Harbor near river mile 6.5, and is listed in DEQ's Environmental Cleanup Site Information (ECSI) as ECSI #84. The Work Plan is intended to summarize the information presented in the June 2017 *Stormwater Source Control Evaluation Report* and further develop interim stormwater SCM concepts for the site.

EPA's comments are categorized as: "Primary," which identify concerns that must be resolved to achieve the assessment's objective; "To Be Considered," which, if addressed or resolved, would reduce uncertainty, improve confidence in the document's conclusions, and/or best support the assessment's objectives; and "Matters of Style," which substantially or adversely affect the presentation of the technical information provided in the report.

Primary Comments

1. **Section 5.1.2 Stormwater Sampling:**

    a. To assist in evaluating whether source control measures (SCMs) are effectively controlling pollutants in stormwater discharges, it is recommended that all stormwater samples from Outfall 107 be analyzed for the impairment parameters to be identified in the forthcoming 1200-Z permit as well as the constituents of concern (COCs) presented in Section 3.2. Per the Joint Source Control Strategy Section D.5.2, at least four separate storm events per year should be sampled. Performing analysis of impairment parameters and COCs only twice per year may not provide sufficient data to evaluate the effectiveness of SCMs and potential risk of Willamette River recontamination from the site. As identified in Section 3.2, past pollutant concentrations in stormwater and stormwater solids are elevated at the site, and the stormwater pathway for Outfall 107 is considered uncontrolled until sufficient data is provided to prove otherwise.

    b. Results from all stormwater samples referenced in a. above should be compiled annually and compared to Screening Level Values (SLVs) presented in Section 3.1 and DEQ's "typical" stormwater curves for industrial sites in the Portland Harbor. Analytical reporting limits should be sufficiently low to allow for these comparisons.

To Be Considered Comments

1. **Section 2.2.2 NW Natural Mixing Station and Koppers Lease Area (Subbasin A):** Figure 2-3 shows two active catch basins (AND660 and AND661) along NW Front Street within the site boundary. However, these catch basins are not discussed in the text and are not included in other Work Plan figures. The stormwater catchment areas draining to catch basins AND660 and AND661 should be described to allow proper evaluation of the stormwater pathway from Subbasin A.

2. **Section 2.3 Observations of Stormwater Runoff:** Figure 2-4 does not indicate that stormwater ponding occurs within the Koppers Tank Basin in Subbasin A. However, this area is later identified as a potential infiltration area, and no regrading activities are being proposed within Subbasin A (Figure 4-1). The Work Plan should be revised to contain additional information for Subbasin A, including overland flow paths and any potential regrading activities that would be necessary to direct stormwater flows within Subbasin A to the Koppers Tank Basin.

3. **Section 2.4.2 Doane Creek:** The text in this section and information in Figure 2-6 indicate that there is a minimum of 2.5 feet of separation between the maximum groundwater elevation and the invert elevation of the 15-inch CMP outfall. However, elevation data is not provided for the upper swale or catch basin AAJ598 which may also function as preferential pathways for contaminated groundwater transport to Doane Creek. Additional information for the upper swale (invert elevation) and catch basin AAJ598 (invert, grate, and piping elevations) should be provided to allow proper evaluation of the pollutant pathway to Doane Creek.

4. **Section 4.5 Decommissioning Doane Creek Outfall Pipe:** It is unclear how plugging and capping the 15-inch CMP outfall will prevent migration of contaminated groundwater around the outside of the pipe. Decommissioning the upper swale downstream of the 15-inch CMP outfall and/or installation of an impervious cutoff wall within the pipe trench should also be evaluated as a means of controlling this potential pollutant pathway.

5. **Section 5.3 Adaptive Management:** This section should also discuss potential source tracing analyses and potential modifications to SCMs within areas discharging to Outfall 107. These measures should be initiated if stormwater sampling results exceed 1200-Z benchmarks or reference concentrations. Source tracing and additional SCMs may also be needed if future stormwater screening analyses indicate that COC concentrations continue to exceed SLVs and are elevated relative to other industrial sites within Portland Harbor.

Matters of Style

1. **Section 2.4.1 Willamette River, Current and Former Stormwater Outfalls:** The text states that maximum groundwater elevations near Outfall WR-107 and the abandoned stormwater pipe ranged from 12.8 feet City of Portland datum (COP) at monitoring well MW-16-125 to 20.0 feet COP at monitoring well MW-4-57. However, these specific monitoring wells are not shown in Figure 2-5. The locations of these monitoring wells and associated maximum groundwater depths should be depicted in Figure 2-5 to allow full understanding of the analysis described.

2/23/2018

City of Portland Review Comments on *Draft Stormwater Source Control Measures and*

Performance Monitoring Work Plan, NW Natural Gasco Property,

dated January 5, 2018

1) The information provided regarding pumping of accumulated stormwater from the Pacific Terminals tank farm does not reflect the information provided to City staff by Pacific Terminals (Pac Term) staff during City stormwater inspection on 2/15/18.
    a. Pac Term stated that they were not pumping this tank farm to the pipe under the dock walkway, rather to a different location, which is near to the fence, on the other side of the tank farm entirely. Please clarify this discrepancy.
    b. Pac Term are working on a new plan to pipe water over to the vegetated area on NW Natural property. This would add to water in the NW Natural ponding area.
    c. The water accumulating in the tank farm is due to the grading of the private roadway located between the LNG tank and the Pacific Terminals Tank farm. The roadway slopes towards the tank farm, instead of away. This is addressed in the discussion on regrading on p. 30.
    d. There is a pipe underneath the dock walkway, which should be removed. It is not in use, and has not been used in a long time.
2) There is additional sheet flow in the walkway area of Pac Term that has not been addressed. There is a small drain at the top of the hill from a cover. There may be additional sources for flow in this area (maybe from the dock walkway itself). The City has concerns that simply stopping pumping from the tank farm will not be enough to solve the problem, and requests additional information to support this approach.
3) Hillside erosion on both sides of the dock walk way should be addressed. The arrows indicated on the 6/2017 Figure 5-1 reflect City staff observations from 2/15/18.
4) BES granted Pacific Terminals permission to pump water up over the wall on a single event-12/7/15. On 10/14/16 Burt Nye of Pac Term called to discuss discharges that were pumped during the previous week.
5) City staff found a structure during our site visit on 2/15/18; it appeared to be an old shut-off valve. This might need some additional investigation. It looked like a shut off valve about 300 feet downstream from WR-107. The site contact did not know what it was.
6) NW Natural and Pacific Terminals may also need to consider pump upgrades in the tank farm, which may also require a larger oil-water separator. The proposed re-grading would be a great first step, and if found to be inadequate, upgrade of sizing would be a second step.
7) The text description of potential infiltration areas does not describe these areas in any detail; the maps (Figure 4-1 and 4-2) show that these areas are up for infiltration improvements
    a. From Figure 5-1 of the 6/2017 Source Control Eval. Report:
        i. ponding in puddles 31-34
        ii. puddles 8-20
    b. The sag in the line referenced in the report would alleviate puddle 30.
8) It appears that there are no proposed corrective actions for puddles 1-3 and the most down-stream sheet flow arrow location on Figure 5-1. City staff observed erosional rills in this area on 2/15/18.

9) There does not appear to be benefit in disconnecting the roof drains for the Pac Terminals office (p.33). The addition of an infiltration area in this area seems like it is only proposed to eliminate a discharge point.
10) Permitting considerations:
    a. NW Natural will need to consider set back requirements from the river and property line for infiltration facilities.
    b. The regrading work is quite extensive and would trigger SWMM requirements.
    c. The areas proposed for stormwater infiltration require soil and groundwater environmental data from the footprint of the facility location(s) to determine the suitability of the site location(s) for infiltration. The sample collection method must be approved prior to commencement of sampling activities.